



THE KNEE

It is now the middle of football season and there aren't too many games that you can watch where a Certified Athletic Trainer (ATC) isn't treating an injured player on the field. As of September 28, 2000, NFL.com reported that there were 292 players that were injured, with 105 of them having injuries to their knees. That accounts for 36% of all injuries. NFL Certified Athletic Trainers are continually working with the coaching staff to figure out how they can control the number of knee injuries in order to decrease this high knee injury percentage. Maybe it was improper technique, insufficient lower extremity conditioning, too soft of ground or previous injuries. Certified Athletic Trainers work hard to prevent these injuries from happening by using preventative braces and taping, but unfortunately, most of the knee injuries occur by a sudden, unpreventable mechanism of injury: a planting of the foot in the ground and a twisting of the knee. Usually this mechanism will be found when athletes are playing on real grass surfaces where the ground may be soft or when the athlete is wearing improper cleats for the playing conditions.

There are three common injuries that occur to the knee that Certified Athletic Trainers refer to as "The Unhappy Triad." "The Unhappy Triad" consists of damage to the ACL (anterior cruciate ligament), the MCL (medial collateral ligament) and the medial meniscus. Usually the term "Unhappy Triad" is used when all three structures are damaged at the same time. However, these structures can be damaged individually depending on the mechanism of injury.



Fig 1

The knee joint is described as a modified hinge joint. Flexion and extension are the most common motions of the knee, but the knee joint also allows approximately 10-15 degrees of internal and external rotation. The knee joint consists of basically two bones, the Femur and the Tibia. These bones rest end to end with soft tissue structures providing stability around the joint. The hamstring, quadriceps, abductor and adductor muscle groups and the gastrocnemius (calf muscle) are the muscles that cross the knee joint, providing stability (Fig 1.). TIP: In order to prevent injury, the first step of care would be to participate in a lower extremity strengthening program to strengthen the previously mentioned muscle groups.

There are several ligaments in the knee that assist with joint stability (Fig 2.). First there is the medial collateral ligament



Fig 2

(MCL) and the lateral collateral ligament (LCL). Both of these structures cross the knee's joint line in a vertical position on either side of the joint. These ligaments prevent side-to-side movement of the knee joint. The second group of ligaments, the ACL (anterior cruciate ligament) and PCL (posterior cruciate ligament), form an "X" like structure within the knee joint. The ACL, the most commonly injured ligament of the knee, helps to prevent the Tibia (the lower leg bone) from sliding forward. The posterior cruciate ligament (PCL), which is rarely injured, prevents the Tibia from sliding backwards past the femur (thigh bone).

Last, but not least, the shock absorber of the knee joint, the meniscus. The menisci are fibrocartilaginous structures that lie between the surfaces of the femur and the tibia. There are two menisci, medial and lateral. Both are C-shaped and conform to the shapes of the tibial surfaces on which they rest (Fig. 3). The menisci have several purposes, such as providing the joint with a synovial fluid for smooth movement, guiding the femur through extension, and stabilization of the joint. The most important role of the meniscus however is the absorption of the load on the joint while weight bearing. The meniscus carries 30% to 55% of joint weight.

One way to self-diagnose damage to these weight-bearing structures would be by observing a popping and clicking sensation/sound in the joint during flexion and extension. The meniscus can develop small tears around its edges. The small tears are what cause the popping sounds and the catching or locking sensations to occur. Usually these tears are produced by a poorly tracking patella (knee cap). If the quadriceps' strength is not strong enough to control the movement of the patella, then the patella can move freely over the open edges of the meniscus. This free movement of the patella is what causes damage to the anterior surface of the meniscus.

Now you can see why they would call damage to these structures "The Unhappy Triad". The next time you see an athlete injure his or her knee on the playing field, you will understand what structures of the knee that possibly could be damaged. Maybe this will help us have a little more sympathy for their pain and misfortune.

The knee joint is very complex and includes many more structures than described in this article. If you feel you may have a knee injury but have never been diagnosed, then call the staff at RehabWorks to set up a consultation with a Certified Athletic Trainer.

Sources: NFL.com and "Athletic Training and Sports Medicine" 2nd Ed.

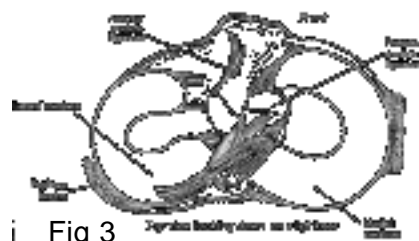


Fig 3



Working Together to Launch a New You
Synergy
KSC FITNESS CENTER

November/December 2000



KSC Fitness Center
Activities

November

National Diabetes Month

2000 InterCenter Walk/Run: We will be hosting a 2 mile walk/run, 5K and 10K on November 14th at 5:00pm at the Shuttle Landing Facility (SLF). Please call 867-7829 with any questions! Volunteers are needed. Hope to see everyone there!

Desktop Yoga: Are you suffering from aches and pains associated with working at a computer or sitting at a desk? Is work causing you stress? Then "Desktop Yoga" is perfect for you. By attending the "Desktop Yoga" seminar, you will learn easy breathing techniques and yoga exercises that can be done at your desk. "Desktop Yoga" is a new and innovative form of yoga that can help solve everyday problems. Please call 867-7829 for locations and to sign up.

November 8th - Cholesterol and CVD screening at the OHF from 7:00am – 8:00am.

The Fitness Centers we will be closed Thursday and Friday, November 23rd - 24th, for the Thanksgiving holiday.

December

National Drunk and Drugged Driving Prevention Month

December 13th - Cholesterol and CVD screening at the OHF from 7:00am – 8:00am.

The Fitness Centers will be closed for the holidays the week of December 25th. We will reopen on Tuesday, January 2nd.



Success Story

Vera Love

Employer: NASA
Age: 36

In being the youngest of 8 very athletic children (6 girls and 2 boys), I started exercising when I was very young. I was an Irish step dancer, basketball player, and runner all through school and the military. But as time and situations changed, the drive to remain physically fit weakened. I became more focused

over the last couple of years, and found the support of the KSC Fitness Center staff to be second to none. To me, having access to the KSC Fitness Centers is better than any health insurance that can be offered by an employer.

Losing my father in 1997 was and still is tremendous motivation for me. Knowing that this giant personality, who was so full of energy and will, could simply slip away after losing the battle to heart disease and diabetes, just devastated me. He exercised a lot in his later years, but the information on disease prevention was not in the forefront throughout his life as it is for us today. Taking good care of myself really is a way for me to thank him and my mother for giving me a life where great health can be easily obtained and maintained.

I love to run because I love being outdoors. I try to run six days/week and lift free weights every few days. I also bike ride, play basketball or run with my daughter on the beach. Sometimes I just like to jump up as high



TO MINIMIZE PAPER COSTS,
PLEASE ROUTE THIS NEWSLETTER TO ALL EMPLOYEES AT THIS MAIL STOP.

WEBSITE: <http://fitness.ksc.nasa.gov>

as I can to see if I can still touch high tree branches. (My 8-year old daughter then runs in the other direction at that point J!)

In keeping with this schedule, I have gone down 3 sizes in my clothing, but my weight has only decreased, at the most, 5 pounds. The scale/weight issue used to always drive me crazy, so now I just focus on how I look and feel. And I feel great mentally and physically! My advice is to eat natural foods, and to eat only what you need. Take a nutrition class, and surround yourself with health-focused friends. Tell yourself that you are treating your body and mind to exercise. Never take your good health for granted! Most of all, remember that HAPPINESS IS A CHOICE! If you find that you are unhappy in a particular situation, work it out. Never forget to take care of who and what is most important...YOU! Life is too short, and speaking for myself, has very little room for misery.

Choices That Become Fatal

By Amber McMillian,
University of Georgia Intern

December is National Drunk and Drugged Driving Prevention Month. Drinking and driving are two choices that are made together all too often. Florida was third in the United States in 1998 for alcohol related deaths involving an automobile with 925 accidents. While one may not hear about all the accidents caused by drinking and driving, fatalities are occurring at an alarming rate. Although drinking is not illegal, and is considered a sport for some; it is both illegal and dangerous to drink and drive. Therefore, when you drink, be smart. Plan ahead and have a sober driver, take a cab, or stay where you are. Don't take the risk.

Drinking and driving is a choice, so alcohol-related accidents and fatalities can be prevented. Alcohol affects the mind and body in many ways, making it difficult to focus on easy tasks, such as driving. Alcohol is a depressant. It reaches the brain within minutes and the flow of oxygen to the brain is reduced. You may experience difficulty talking, focusing and judging distances. These effects make it hard for anyone to drive while intoxicated.

Many do not realize that alcohol involvement is the leading factor in motor-vehicle deaths, according to the National Center for Health Statistics (NCHS). According to the U.S. Department of Transportation, in 1999 a person was killed in a drinking and driving

accident every 31 minutes. It is estimated that 2.6 million drinking and driving accidents victimize 4 million innocent people each year. Driving drunk is not worth the millions of lives lost.

The current blood alcohol concentration (BAC) level that constitutes legal intoxication is 0.10 in 32 states and 0.08 in the other 18. A 120-lb. woman will most likely hit the limit of 0.10 with two 6-ounce glasses of wine. According to the NCHS, the average BAC in a drunk driving fatality is 0.17. Mothers Against Drunk Driving (MADD) is now working to lower the legal BAC to 0.08 in all 50 states. Since MADD was organized in 1980, alcohol related traffic deaths have decreased by 40 percent, according to the Department of Transportation.

So what should you do if you would like to go out and have a few drinks? The most important question is how you will get home or to your certain destination? Pick a designated driver for the evening. Take turns with your friends or spouse as to who will drive. Call a taxi. Give your keys to a friend. Drinking alcohol does not have to be a fatal disaster. Take the time to plan your evening - don't risk your life or anyone else's.

Ask Miss Muscle

Q: Are super-slow repetitions a better method to build strength?

A: Doing repetitions with lighter weights than you usually use at about one-third the normal speed – that is, “super slow” forces you to fully contract the muscles you're working through their full range of motion. Super-slow strength-training is safer too, because your chances of hurting yourself are much less with lighter weights. Yet it's harder because it takes a lot more discipline to maintain proper form and move at a super-slow rate.

Why don't more people train this way? In a word, ego. Most people use heavy weights in gyms – even if they have to forcibly “throw” them and use bad form to complete the repetition – because it looks more macho. They are more concerned with demonstrating strength than with building muscular strength and endurance.

Next time you're at the KSC Fitness Centers, cut the weight you use by half and slow down the speed of your repetitions. But be forewarned: You may be sore two days later, because you're using part of your muscles that you did not stress in the past.

Vegan-Friendly Restaurants

For those of you that prefer vegetarian meals, check out these restaurants in Brevard County that provide plant-based menu options:

- Cantina Dos Amigos - Indian Harbour Beach**
- Community Harvest - Melbourne**
- Daisen Japanese Restaurant - Merritt Island**
- Gardener's Cottage - Cocoa Village**
- Gen-Nai Japanese Restaurant - Melbourne**
- Lebanese Gourmet - Indialantic**
- Living Greens - Merritt Island**
- Mango Tree - Cocoa Beach**
- Matt's Tropical Grill - Indian Harbour Beach**
- Rita's Vegetarian Indian Cuisine - Cocoa**
- Yen Yen - Cocoa Beach**

Whole Grain Diet for Diabetics

Some 16-million Americans have diabetes, the number one cause of blindness, limb loss and kidney failure. With 625,000 new cases reported each year, experts fear an epidemic. However, Harvard researchers have just discovered that a diet high in whole grains significantly lowers the risk of diabetes. Breakfast cereals had the best effect, dropping risk by 34%, better than dark bread and oatmeal. Dr. Gerald Bernstein, a clinical professor and former president of the American Diabetes Association says, “The number of people who have it is increasing every year because as a country, we are becoming more obese and more sedentary. And we have to reverse that. We have to find ways to change how we live in order to reduce the risk of diabetes.” The research, published in the American Journal of Public Health, recommends increasing consumption of whole grains like those found in Wheaties, Total, Wheat Chex, and Cheerios to help in the fight against diabetes.

Source: American Dietetic Association

Canola oil? What exactly is this stuff?

The word “canola” is a registered trademark for a genetic variation of the rapeseed plant developed by Canadian breeders for its nutritional qualities, especially its low saturated fat content. “Canola” is derived from

the words Canadian and oil. The canola plant, grown mainly in western Canada, produces pods that contain seeds that are crushed to release oil. Fats and oils are made up of different combinations of fatty acids. Compared to other fats on the market, canola oil is the lowest in saturated fat. Canola oil is moderate in polyunsaturated fat, and relatively high in monounsaturated fats. Canola oil also contains alpha linolenic fatty acid, one of the omega-3 fatty acids. In addition to lowering blood cholesterol, this type of fatty acid has been shown to lower blood triglycerides and has an anticlotting effect by reducing blood stickiness.

Source: Mayohealth.org, 1999

Fit Over Fifty

So, you've thought about coming to the Fit Over Fifty class but you just didn't think you would be able to keep up. Well, a lot of the members felt the same way, but tried it anyway. We have a lot of fun and we have had great results. The participants have lost weight and inches and have never felt better. Practically every time class is held, someone has a great progress report. They feel better, mentally and physically, sleep has improved and they have more energy. If interested, we will conduct a sit and reach flexibility test and measure your body fat, so that you can have another avenue to track your progress as well. During every class I, Kay Murray, provide an eating tip and the participants try to accomplish the objective/goal, then during the next class participants voluntarily report their results whether successful or not. You're never too old to learn something new, especially if it is an activity that is going to benefit your health and quality of life. For example, our oldest member is 76 years old and going strong.

In order to achieve results and obtain your goals the key is to believe in yourself and to be consistent. When you join the Fit Over Fifty class, you can also receive individual attention outside of the group setting. Kay is here to help encourage and motivate you through a fitness program that will allow you to obtain your goals. It only takes a few minutes to fill out the registration form and to receive a fitness center badge. All you need is workout clothes, sneakers and a water bottle. Contact Kay at 867-7829 to answer all your questions or to get started today on a program that can change your life like it already has for many others. Put on your sneakers and let's get fit. Hope to see you in the Fit Over Fifty class on Tuesdays and Thursdays at 5:00pm in the O&C Group Exercise Studio.